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Date du dépôt international (jour/mois/année) 20 novembre 2003 (20.11.2003)	
Déposant COMMISSARIAT A L'ENERGIE ATOMIQUE etc	

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Translation

PATENT COOPERATION TREATY

PCT/FR2003/050125



# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference B 14222.3 CS	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR2003/050125	International filing date (day/month/year) 20 novembre 2003 (20.11.2003)	Priority date (day/month/year) 25 novembre 2002 (25.11.2002)
International Patent Classification (IPC) or national classification and IPC G01T 1/24, 1/17		
Applicant COMMISSARIAT A L'ENERGIE ATOMIQUE		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.	
2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.	
<input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>3</u> sheets.	
3. This report contains indications relating to the following items:	
I <input checked="" type="checkbox"/>	Basis of the report
II <input type="checkbox"/>	Priority
III <input type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV <input type="checkbox"/>	Lack of unity of invention
V <input checked="" type="checkbox"/>	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI <input type="checkbox"/>	Certain documents cited
VII <input type="checkbox"/>	Certain defects in the international application
VIII <input type="checkbox"/>	Certain observations on the international application

Date of submission of the demand 29 mai 2004 (29.05.2004)	Date of completion of this report 10 February 2005 (10.02.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR2003/050125

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages \_\_\_\_\_ 1-22 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_ 1-11 \_\_\_\_\_, filed with the letter of 08 November 2004 (08.11.2004)
- ☒ the drawings:  
 pages \_\_\_\_\_ 1/6-6/6 \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/FR 03/50125

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-11	YES
	Claims		NO
Inventive step (IS)	Claims	1-11	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-11	YES
	Claims		NO

### 2. Citations and explanations

#### 1. Technical field

A processing circuit for a spectrometry system.

#### 2. Novelty

None of the cited documents discloses a differentiator stage that is directly connected to an assembly consisting of the integrator and the integration duration control means. Claim 1 is, therefore, novel (PCT Article 33(2)).

#### 3. Inventive step

Document US 4 727 256 (D1), which is considered to be the closest prior art, describes a processing circuit for a spectrometer system including a particle radiation detector, which circuit comprises a charge preamplifier stage that receives, from said detector, a pulsed current representing the charge amount emitted by a particle that has interacted with said detector, an integrator stage, and a differentiator stage connected to said charge preamplifier stage, wherein said differentiator

stage receives a signal from said charge preamplifier stage and outputs an image signal of the detector current to said integrator stage, and said integrator stage outputs an image of the charge amount emitted by a particle that has interacted with said detector. Said circuit is characterised in that the integrator stage consists of an integrator that co-operates with the integration duration control means for durations substantially equal to the duration of each detector current pulse.

It follows that the subject matter of claim 1 differs in that said differentiator stage is directly connected to an assembly consisting of the integrator and the integration duration control means, and in that said differentiator stage and said assembly form a passband filter with self-adapting time constants.

The problem that the present invention is intended to solve can therefore be considered to be that of producing a processing circuit for a spectrometry system, which circuit is capable of outputting a signal that expresses incident-particle energy with precision.

Since none of the documents suggests the direct connection of a differentiator stage to an assembly consisting of the integrator and the integration duration control means, thereby forming a passband filter with self-adapting time constants and advantageously enabling the output of a high-precision signal, claim 1 fulfils the PCT requirement of inventive step (PCT Article 33(3)).

4. Dependent claims

Claims 2 to 11 are dependent on claim 1 and, as such, therefore also fulfil the PCT requirements of novelty and inventive step.

5. Industrial applicability

The invention as defined in claims 1 to 11 is undoubtedly industrially applicable.

6. The term "substantially" in claim 1 (line 22) is vague and ambiguous and casts doubt on the meaning of the technical feature to which it refers. As a result, the subject matter of said claim has not been defined clearly (PCT Article 6).

The following feature:

*"the integrator stage consists of an integrator that co-operates with the integration duration control means substantially for the duration of each detector current pulse"*

has been interpreted as follows:

*"the integrator stage consists of an integrator that co-operates with the integration duration control means for durations substantially equal to the duration of each detector current pulse"*  
(see page 10, lines 24 to 27).

7. The following sentence in claim 1 (lines 26 to 28) is vague and ambiguous and casts doubt on the meaning of the technical feature to which it refers. As a result, the subject matter of said claim has not been defined clearly (PCT Article 6):

*"the differentiator stage and the assembly form a passband filter with self-adapting time constants".*

Said sentence has been interpreted as follows:

*"the differentiator stage and the assembly form a passband filter with time constants that are self-adaptable based on the form of said detector current".*

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